(19) European Patent Office
Office européen des brevets

(11) Publication number: **0 157 A1**

(12) # EUROPEAN PATENT APPLICATION

(21) Application number: 85200317.7

(22) Date of filing: 05.03.85

(51) Int. Cl.⁴: **A 23 L 3/36**, A 23 L 1/216

(30) Priority: 08.03.84 NL 8400739

(43) Date of publication of application: 09.10.85
Bulletin 85/41

(84) Designated Contracting States: **AT BE CH DE FR GB IT LI LU SE**

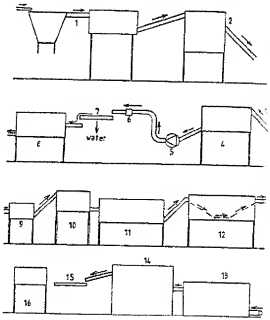
(71) Applicant: **Fri d'Or B.V., Kade 10 Postbox 394, NL-4600 AJ Bergen op Zoom (NL)**

(72) Inventor: **van der Wiel, Aart Marius Leendert, W. de Goedeweg 10, NL-3331 KT Zwijndrecht (NL)**

(74) Representative: **Siemens, Andreas Meinhard Ernest, Dipl.-Ing., SIEMENS & CIE. Roskam 8, NL-4813 GZ Breda (NL)**

(54) **A process method and a device for the preparation of deep frozen preservable meals, and produce obtained by said method.**

(57) A process method for the preparation of deep frozen preservable instant meals, consisting of potato produce and vegetables, and a device for said process, consisting of washing appliance (1), peeling apparatus (2), brusher (3), rinsing appliance (4), pump (5), cutter (6), moisture withdrawal appliance (7), unstaining belt (8), reverse stream cooler (9), screw unstaining apparatus (10), three-stage-dryer belt (11), frier (12), belt cooler (13), belt freezer (14), assorting strainer (15) and mixer barrel (16).



EP 0 157 442 A1

Ref.:85-07.

Specification:

Eur.Patent Appl.Nr.85.200.317.7. Int.Class.:A 23 L 3/36.

A process method and an appliance for the preparation of preservable deep-frozen meals, and a product obtained with this method.

Applicant:Frid'or B.V., Kade 10, NL - 4600,
Bergen op Zoom.

The invention relates to a process method and an appliance for the preparation of preservable deep-frozen meals which should merely be removed from the package, put into a frying pan with some fat and heated up with stirring, after which these are ready for consumption.

The invention also relates to the product so prepared.
So-called "instant meals" and "plates" are already known.

There is an increasing demand for such products, but disadvantages are the poor appearance, the restricted preservability and the fact that the product should be heated in an oven during about 45 minutes, while in most cases it does not comprise the completeness of components desired, and it is not blended in such a manner that it might be served but for additional treatment.

Moreover the so-called plates subsist of little vegetables and potatoes and of relatively too much meat, and after heating the degree of state of being done of the several components is mostly divergent, such that the vegetables are overdone for example, while the meat is not sufficiently done, and the potatoes are partly overdone and yet partly locally raw.

Potatoes as a whole and in larger pieces are not very freeze-proof, since they might become glassy at subsequent heating.

This is particularly relevant for certain potato-races being cultivated in zones of moderate climate, to such an extent that these

appeared to be less suitable for the conventional treatment with machine processing units.

Investigations have been carried out to find an instant meal composition appropriate for deep freezing and for storage during extensive periods of time, keeping a nice performance and good properties in terms of taste and nutritional value while no additional treatment should be necessary.

The very extensive experiments have shown that the detrimentals such as the glassiness and loss of relish can be obviated for improved potatoes, such as used for french fries precedingly roasted.

It has been discovered that by the use of a certain sequence of treatment stages of steam-peeled, brushed and cut potato parts, a product can be obtained which, compounded with deep frozen cut onions, paprika, green garden peas, corn, leek and carrots or parsnip gives a savoury instant meal, which is well-preservable in a deep frozen state and which is directly consumable after warming up.

The process method for the preparation of deep frozen preservable meals, consisting of potatoes and vegetables, and which can be taken of the packaging and be consumed directly after warming up, is characterized according to the present invention, in that potatoes, after washing and peeling with steam and brushing, are subjected to cutting by a device of knife blades, the cut produce being dewatered and blanched in a combined conveyor blanching vat during 5-6 minutes at about 75^0 C, subsequently cooled with rinsing water in a counter-current cooler down to 25^0-30^0 C, the cooled strips blanched once more in water in a screw type blanching device during 5-6 minutes at 75^0 - 80^0 C, predried in a three-stage hot air conveyor drier to an eventual moisture content of about 75%, the dried strips are fried in hardened vegetable fat during about 60 seconds at 175^0-185^0C, the cuttings are precooled with atmospheric air on a conveyor cooler to 15^0C and subsequently frozen in a conveyor-freezer to -15^0C, after which the cut product is sorted at the length desired, mixed in its deep frozen state in a mixing drum with deep frozen onions, paprika, green peas, corn, leek and carrots, and the mix is weighed and packed.

The blanching is necessary to deactivate enzymes.

The proportion of the components is preferably as follows:

potato strips	40% by weight
carrots	18% by weight
leek	12% by weight
corn	6% by weight
onions	6% by weight
paprika	6% by weight
green peas	12% by weight.

With this method of processing, damage and decrease of quality are prevented.
The installation for the process is schematically shown in the enclosed drawing.

Therein (1) is the washing station, (2) is the steam peeling device, (3) a conveyor with brushes, (4) an after-washer, (5) a water pump, (6) a consistent knife blade block, (7) a dewatering station, (8) a blanching conveyor, (9) a counter-current cooler, (10) a screw blanching device, (11) a three-stage conveyor drier, (12) a frying pan, (13) a cooler-conveyor, (14) a freezer-conveyor, (15) a sorting screen-strainer, and (16) a slowly rotating mixing drum for composing all the components.

The product obtained can be packed upon vacuum-drawn dishes or plates of hard polystyrene with sealed film, or in plastic bags.

During blanching and all other preparatory treatment stages crumbling ought to be prevented.
Product damage influences the appearance of instant meals, and therefore it has been tested how such detrimental influences, by mechanical transport, storage in bags, and by sun, light and moisture, could be eliminated. Cleaning, sorting and treatment on appropriate conveyors as described have proved to be favourable for the handling of composed food mixtures, if carried out with special care.
The behaviour of free flowing food materials during transport in processing circumstances has been studied by N.N. Mohensenin and published in "Physical Properties of plant and animal materials " (Gordon & Breach, New York, 1970).

According to the above described method care is taken and measures can be observed to prevent damage of the constituents of the food such that the meal will comply with exigences of national and international authorities.

Claims:

1. A process method for the preparation of deep-frozen preservable food consisting of potato and vegetable produce, characterized in that potatoes are washed and peeled with steam, brushed and cut with a consistent knife blade block, that the cut product is dewatered and blanched in a conveyor blancher during 5-6 minutes at about 75^0C, subsequently cooled down to $25-30^0$C in a counter-current cooler, the cooled strips are blanched once more in water in a screw-type blancher, during 5-6 minutes at 75^0-80^0C, predried in a three stage hot-air conveyor-drier until an eventual moisture content of about 75%, the dried strips are fried in hardened vegetable fat during about 60 seconds at 175^0-185^0C, the cut product is precooled to about 15^0C with atmospheric air upon a conveyor-cooler and subsequently frozen in a conveyor freezer to -15^0C, after which the cut product is sorted at the length size as desired, mixed in deep frozen state in a mixing drum with deep-frozen onions, paprika, green garden peas, corn, leek and carrots and the mix is weighed and packed.

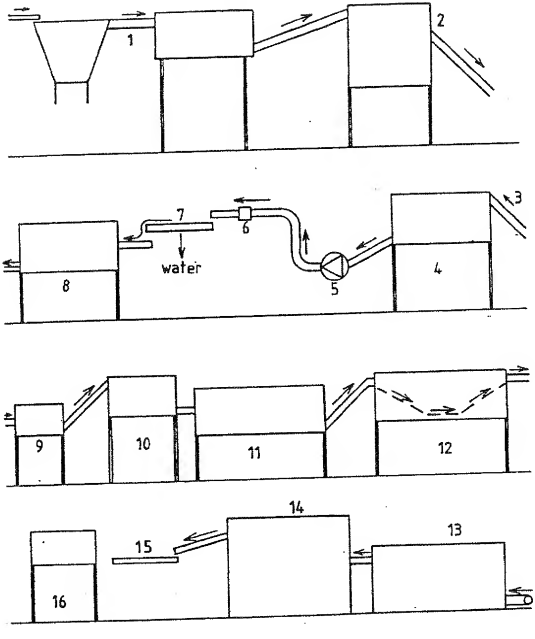
2. A device for the preparation of deep-frozen preservable meals, characterized by a processing sequence of a washing station (1), a steam peeling device (2), a brusher-conveyor (3), an after washer (4), a pump (5), a block of knife blades (6), a dewatering station (7), a conveyor blancher (8), a counter current cooler (9), a screw type blancher (10), a three-stage conveyor-drier (11), a frying pan (12), a conveyor-cooler (13), a conveyor-freezer (14), a sorting screen strainer (15) and a mixing drum (16).

3. A product obtained with the process method according to claim 1, and with the device according to claim 2 respectively, characterized in that the composition is as follows:

Potato strips:	40% by weight
carrots:	18% by weight
leek:	12% by weight
corn:	6% by weight
onions:	6% by weight
paprika:	6% by weight
garden peas:	12% by weight.

(Figure).

1/1



Fri d' Or B.V.
Bergen op Zoom
(NL)

European Patent Office

EUROPEAN SEARCH REPORT

Application number
EP 85 20 0317

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
A	DE-A-2 624 391 (INSTITUUT VOOR BEWARING EN VERWERKING VAN LANDBOUW PRODUKTEN) * Claim 1 * ---		A 23 L 3/36 A 23 L 1/216
A	US-A-3 774 524 (H.H. HOWARD) * Abstract * -----		

TECHNICAL FIELDS SEARCHED (Int. Cl.4)

A 23 L 3/00
A 23 L 1/00

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
BERLIN	05-06-1985	SCHULTZE D

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO Form 1503 03 82